

Date: Tuesday, 6/26/2007 3:09:03 PM  
User: Kim Johnston

## Process Sheet

31

Customer : CU-DAR001 Dart Helicopters Services Drawing Name : OH-58 FWD X-TUBE ASSEMBLY - UNDER REVIEW  
Job Number : 33149  
Estimate Number : 12526  
P.O. Number : N/A Part Number : D058676101  
This Issue : 6/26/2007 S.O. No. : N/A Drawing Number : D058-676-141 REV A2  
Prsht Rev. : NC Project Number : N/A  
First Issue : N/A Type : LANDING GEAR Drawing Revision : A2 UNDER REVIEW  
Previous Run : 33148 Material : N/A # 07.06.27  
Written By : Due Date : 7/30/2007 Qty: 1 Um: Each  
Checked & Approved By : HA 07.06.27  
Comment : Est Rev: 06.09.11 Reformat IEC

## Additional Product

Job Number:



Seq. #: Machine Or Operation: Description :

1.0 DC DOCUMENT CONTROL



KS 07.07.26

Comment: DOCUMENT CONTROL

Photocopy bluefile and create labels as per PPP D058-676-101CHG001

07.06.27

2.0 D6001105 Crosstube



Comment: Qty: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

Pick:

Qty Part number Description Batch

1 D6001-105 Crosstube 3 25661

\* Unable to enter BG 07.11.10

3.0 MORI SEIKI MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI CNC LATHE LARGE

1-Fill tube with sand &amp; install plugs - on both ends as per Folio FA085

2-Turn first side as per Folio FA085

3-Deburr &amp; Inspect for surface damage.

BG 07.11.10

4.0 QC1 INSPECT ALL DIM TO DIM SHEET



Comment: INSPECT ALL DIM TO DIM SHEET

BG 07.11.10

# Dart Aerospace Ltd

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes ☒ No ☐ DQA: ☒ Date: 01/11/30  
 QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR:     |      | WORK ORDER NON-CONFORMANCE (NCR)  |                                |  |                |                              |                       |                          |  |
|----------|------|---|--------------------------------|--|----------------|------------------------------|-----------------------|--------------------------|--|
| DATE     | STEP | Description of NC<br>Section A  | Corrective Action<br>Section B |  |                | Verification<br>Section C    | Approval<br>Chief Eng | Approval<br>QC Inspector |  |
|          |      |   | Initial<br>Chief Eng           | Action Description<br>Chief Eng  | Sign &<br>Date |                              |                       |                          |  |
| 07.11.11 | 3    | Tube has been buffed up at 27.125" from the end of side "A". The calculated $\phi$ at length is 2.2013" $\pm$ .005. Actual $\phi$ is 2.195". Buffing was required $\rightarrow$ tool chatter. | <br>07.11.12<br>PL<br>Q51042   | Tube buffed and re-measured.<br><br>Tube is in tolerance & is therefore acceptable | BG<br>07.11.11 | <br>07.11.12<br>PL<br>Q51042 | <br>07.11.26          |                          |  |
|          |      |   |                                |  |                |                              |                       |                          |  |
|          |      |   |                                |  |                |                              |                       |                          |  |

NOTE: Date & initial all entries

Date: Tuesday, 6/26/2007 3:09:03 PM  
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## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: OH-58 FWD X-TUBE ASSEMBLY - UNDER REVIEW

Job Number: 33149

Part Number: D058676101

Job Number:



Seq. #:

Machine Or Operation:

Description :

5.0

MORI SEIKI

MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI CNC LATHE LARGE

1-Turn second side as per Folio FA085

2-Deburr & Inspect for surface damage.

SG 07.11.11

①

6.0

QC1

INSPECT ALL DIM TO DIM SHEET



Comment: INSPECT ALL DIM TO DIM SHEET

SG 07.11.11

①

7.0

QC8

SECOND CHECK



Comment: SECOND CHECK

IF 07/11/13 ①

8.0

MORI SEIKI

MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI CNC LATHE LARGE

1-Remove sand and plugs

2-Scribe part # and batch # using vibrating stylus as per Dwg D058-676-141

Inside of Cuff(Donot engrave on outside of tube)

SG 07.11.11

①

9.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Polish entire outside surface of crosstube

JB 7-11-19

10.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

DP 7-11-19

11.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1

EL 7-11-19

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries

Date: Tuesday, 6/26/2007 3:09:03 PM  
User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: OH-58 FWD X-TUBE ASSEMBLY - UNDER REVIEW

Job Number: 33149

Part Number: D058676101

Job Number:



Seq. #:

Machine Or Operation:

Description :

12.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

DP 7-11-19

13.0

BENDING

BENDING MACHINE



Comment: BENDING MACHINE

Bend tube as per Dwg D058-676-141 using CNC bender program OH58-fw and Folio FT014

EL 7-11-19

14.0

QC6

DIMENSIONAL CHECK



Comment: Inspect dimensions and work To Current Step

7-11-20 ①

15.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Drill pilot holes in tube as per Dwg D058-676-141 using drill Jig DT8541 & DT8542

2-Ream hole to finish size in tube as per Dwg D058-676-141 using drill Jig DT8541 & DT8542. Check dimensions between holes, both sides on both cuffs, to ensure alignment with saddle holes.

3-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D058-676-141

SR  
7-11-20  
AWM 07-11-21

16.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1

AWM 07-11-21

17.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

7/14/22

18.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

check Hole  
7/14/22

7/14/22

19.0

OUTSIDE SERV 10

OUTSIDE SERVICES -LG



Comment: Sub-Contracting OUTSIDE SERVICES

Liquid Penetrant Inspection as per QSI 0380

Issue P/O: 3133

LPI as per ASTM 1417 Level 2

07/11/26 ①

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries

Date: Tuesday, 6/26/2007 3:09:03 PM  
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## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: OH-58 FWD X-TUBE ASSEMBLY - UNDER REVIEW

Job Number: 33149

Part Number: D058676101

Job Number:



Seq. #:

Machine Or Operation:

Description :

Attach copy of NDT results to work order

20.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Inspect for transit damage Ensure copy of NDT results attached to work order.

6/27/07

21.0

QC6

DIMENSIONAL CHECK



Comment: Inspect for damage & ensure results are as per Dwg D058-676-241

5/24/07

22.0

SPRAY PAINTING

SPRAY PAINTING



Comment: SPRAY PAINTING

1-Prime inside and outside crosstube as per QSI 005 4.2

2-Paint outside crosstube with White Imron as per QSI 005 4.2

ml 07 11 24 (1)

23.0

QC14

INSPECT SPRAY PAINT



Comment: Inspect Spray Paint

Then, Wrap in plastic bag to protect from scratches

5/26/07

24.0

D2856400

Abrasion Strip



Comment: Qty.: 0.5800 f(s)/Unit Total : 0.5800 f(s)

Pick:

Qty Part number Description Batch

2 D2856-400-694 Abrasion Strip 34642

ml 07 11 25

25.0

D28911

Support 2.25 dia



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Pick:

Qty Part number Description Batch

2 D2891-1 Support 29108

ml 07 11 25

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries



Date: Tuesday, 6/26/2007 3:09:03 PM  
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## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: OH-58 FWD X-TUBE ASSEMBLY - UNDER REVIEW

Job Number: 33149

Part Number: D058676101

Job Number:



Seq. #:

Machine Or Operation:

Description :

26.0

MS2192020

Clamp (per MIL-DTL-8783C)



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Pick:

Qty Part number

Description Batch

4 MS21920-20

Clamp 103478

ml 07 11 25

27.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Install abrasion strips as per QSI 035 using DT8579

2-Install supports and clamps as per Dwg D058-676-141. Torque clamps to 80-100 in lb.

ml 07 11 25 (1)

28.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

5 07/11/27 (X)

29.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Pick Packing Kit

30.0

AN532A

Bolt



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Pick: Packing Kit

Qty Part number

Description Batch

4 AN5-32A

Bolt

M104936

AS 07/11/28 (X)

31.0

AN960JD516

Washer



Comment: Qty.: 8.0000 Each(s)/Unit Total : 8.0000 Each(s)

Pick: Packing Kit

Qty Part number

Description Batch

8 AN960JD516

Washer

M104156

AS 07/11/28 (X)

**Dart Aerospace Ltd**

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes ☒ No ☐ DQA: DD Date: 07/11/30  
 QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries

Date: Tuesday, 6/26/2007 3:09:03 PM  
User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: OH-58 FWD X-TUBE ASSEMBLY - UNDER REVIEW

Job Number: 33149

Part Number: D058676101

Job Number:



Seq. #:

Machine Or Operation:

Description :

32.0

MS21042L5

Nut



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Pick: Packing Kit

Qty Part number

Description Batch

4 MS21042L5

Nut (or -5)

M10 9B0

AS 07/11/28 (X1)

33.0

QC4

INSPECT 100% KITS FOR COMPLETENESS



Comment: INSPECT 100% KITS FOR COMPLETENESS

AS 07/11/29 (X1)

34.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and pack for shipping as per PPP D058-676-101

Location:

Rev B

SP

AS 07/11/29 (X1)

35.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

AS 07/11/30 (1)

Job Completion



W 07/11/30

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

NOTE: Date & initial all entries

|   |                     |                    |
|---|---------------------|--------------------|
| <b>DART AEROSPACE LTD</b>                               | <b>Work Order:</b>  | 33149              |
| <b>Description:</b> Crosstube Assembly (OH-58 High Fwd) | <b>Part Number:</b> | D058-676-141       |
| <b>Inspection Dwg:</b> D058-676-141 <b>Rev:</b> A2      |                     | <b>Page 1 of 1</b> |

### FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article
 ☐ Prototype

| Inspection Sheet | Drawing Dimension | Tolerance     | Actual Dimension | Accept | Reject | Method of Inspection | Comments |
|------------------|-------------------|---------------|------------------|--------|--------|----------------------|----------|
| SIDE A           | 2.240             | +0.005/-0.000 | 2.245            | ✓      |        |                      |          |
|                  | 2.069             | +0.005/-0.000 | 2.074            | ✓      |        |                      |          |
|                  | 2.113             | +0.005/-0.000 | 2.118            | ✓      |        |                      |          |
|                  | 2.158             | +0.005/-0.000 | 2.163            | ✓      |        |                      |          |
|                  | 2.183             | +0.005/-0.000 | 2.186            | ✓      |        |                      |          |
|                  | 2.209             | +0.005/-0.000 | 2.210            | ✓      |        |                      |          |
|                  | 2.235             | +0.005/-0.000 | 2.236            | ✓      |        |                      |          |
|                  |                   |               |                  |        |        |                      |          |
|                  | 0.100             | +/-0.010      | .100             | ✓      |        |                      |          |
|                  | 0.144 x 30°       | +/-0.010      | .144             | ✓      |        |                      |          |
|                  | R0.063            | +/-0.010      | .063             | ✓      |        |                      |          |
|                  | R0.500            | +/-0.010      | .500             | ✓      |        |                      |          |
|                  | 4.207             | +/-0.001      | 4.207            | ✓      |        |                      |          |
|                  |                   |               |                  |        |        |                      |          |
| SIDE B           | 2.240             | +0.005/-0.000 | 2.242            | ✓      |        |                      |          |
|                  | 2.069             | +0.005/-0.000 | 2.071            | ✓      |        |                      |          |
|                  | 2.113             | +0.005/-0.000 | 2.115            | ✓      |        |                      |          |
|                  | 2.158             | +0.005/-0.000 | 2.161            | ✓      |        |                      |          |
|                  | 2.183             | +0.005/-0.000 | 2.186            | ✓      |        |                      |          |
|                  | 2.209             | +0.005/-0.000 | 2.214            | ✓      |        |                      |          |
|                  | 2.235             | +0.005/-0.000 | 2.238            | ✓      |        |                      |          |
|                  |                   |               |                  |        |        |                      |          |
|                  | 0.100             | +/-0.010      | .100             | ✓      |        |                      |          |
|                  | 0.144 x 30°       | +/-0.010      | .144             | ✓      |        |                      |          |
|                  | R0.063            | +/-0.010      | .063             | ✓      |        |                      |          |
|                  | R0.500            | +/-0.010      | .500             | ✓      |        |                      |          |
|                  | 4.207             | +/-0.001      | 4.207            | ✓      |        |                      |          |
|                  |                   |               |                  |        |        |                      |          |
|                  | 103.03            | +/-0.020      | 103.03           | ✓      |        |                      |          |

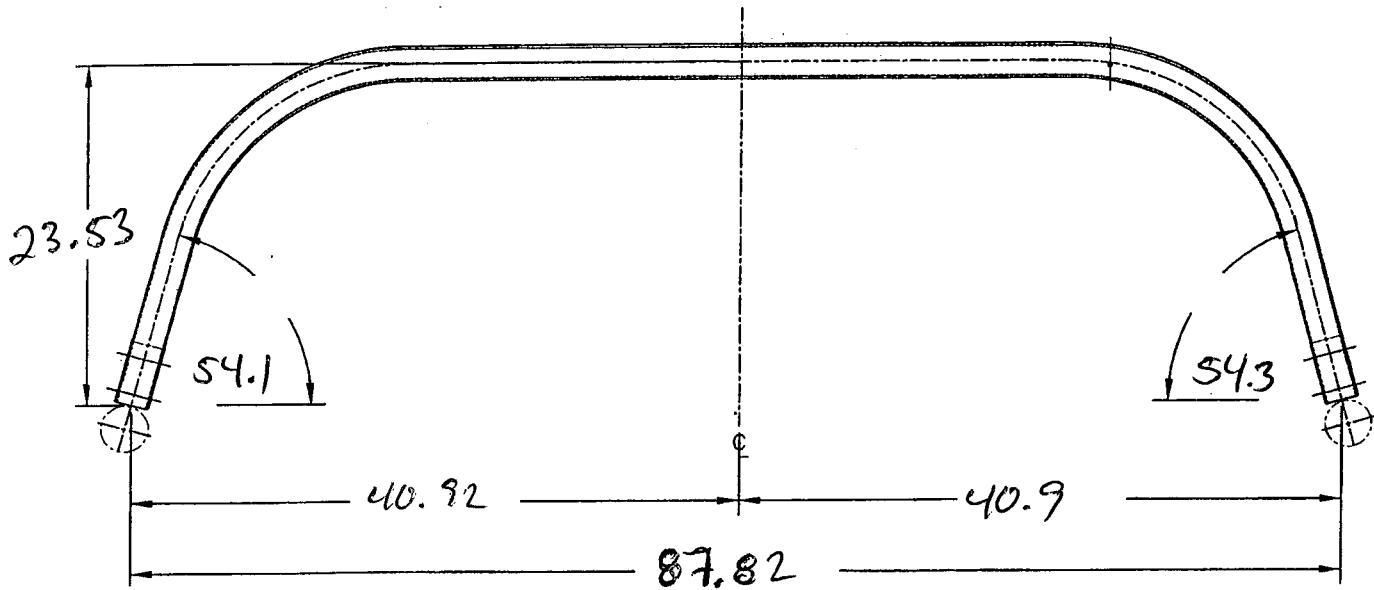
|                     |                    |                    |          |                            |     |
|---------------------|--------------------|--------------------|----------|----------------------------|-----|
| <b>Measured by:</b> | <i>[Signature]</i> | <b>Audited by:</b> | J.F.     | <b>Prototype Approval:</b> | N/A |
| <b>Date:</b>        | 07.11.10           | <b>Date:</b>       | 07/11/13 | <b>Date:</b>               | N/A |

| Rev | Date     | Change                       | Revised by | Approved           |
|-----|----------|------------------------------|------------|--------------------|
| A   | 07.03.26 | New Issue (P/O D058-676-101) | KJ/JLM     | <i>[Signature]</i> |

|   |         |              |              |
|---|---------|--------------|--------------|
| DART AEROSPACE LTD                      |         | Work Order:  | 33149        |
| Description: Crosstube High Fwd (OH-58) |         | Part Number: | D058-676-101 |
| Inspection Dwg: D058-676-141            | Rev: A2 | Page 1 of 1  |              |

07.06.27

| Required Dimension | Min   | Max   |
|--------------------|-------|-------|
| Height             | 23.52 | 23.64 |
| 1/2 Span           | 40.86 | 40.98 |
| Angle              | 54    | 56    |
| Total Span         | 81.72 | 81.96 |



| Comments |
|----------|
|          |
|          |
|          |
|          |

|                 |          |
|-----------------|----------|
| QC15 Inspection |          |
| Date            | 07-11-20 |

| Rev | Date     | Change    | Revised by | Approved |
|-----|----------|-----------|------------|----------|
| A   | 07.02.06 | New Issue | KJ/JM      |          |



|                     |                       |   |                        |
|---------------------|-----------------------|---|------------------------|
| DESIGN<br><i>CP</i> | DRAWN BY<br><i>CP</i> | DART AEROSPACE LTD<br>HAWKESBURY, ONTARIO, CANADA |                        |
| CHECKED<br><i>#</i> | APPROVED<br><i>#</i>  | DRAWING NO.<br>D058-676-141                       | REV. A<br>SHEET 1 OF 3 |
| DATE<br>00.11.17    |                       | TITLE<br>CROSSTUBE ASS'Y (OH-58 HIGH FWD) NTS     |                        |
| A                   | 00.11.17              | NEW ISSUE   |                        |

| Qty | Part Number   | Description                         |
|-----|---------------|-------------------------------------|
| X   | D058-676-141  | CROSSTUBE ASSEMBLY (OH-58 HIGH FWD) |
| 1   | D6001-105     | CROSSTUBE                           |
| 2   | D2856-400-694 | ABRASION STRIP                      |
| 2   | D2891-1       | SUPPORT                             |
| 4   | MS21920-20    | CLAMP                               |

#### GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 2) MATERIAL: MANUFACTURED FROM D6001-105  
FINISHED LENGTH = 103.03±0.020
- 3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 4) PART IS SYMMETRIC ABOUT CENTERLINE.
- 5) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 6) MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- 9) INSTALL D2856-400-694 ABRASION STRIP WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF CROSSTUBE, CENTERED OPPOSITE D2891-1 SUPPORT, PER QSI 035.
- 10) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 11) SEAL EDGES OF SUPPORTS AND ABRASION STRIP USING SIKAFLEX-241/291 SEALANT.
- 12) TORQUE CLAMPS 80 TO 100 IN-LB.

*# 07.06.26*  
**UNDER REVIEW**

*06.10.18 DH*  
*Update New D.O*

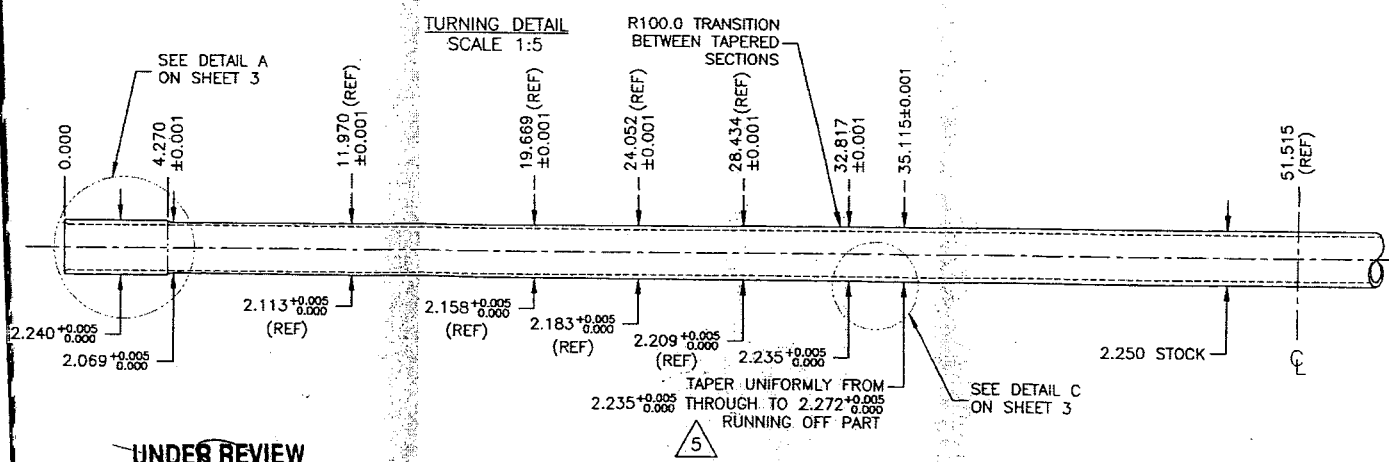
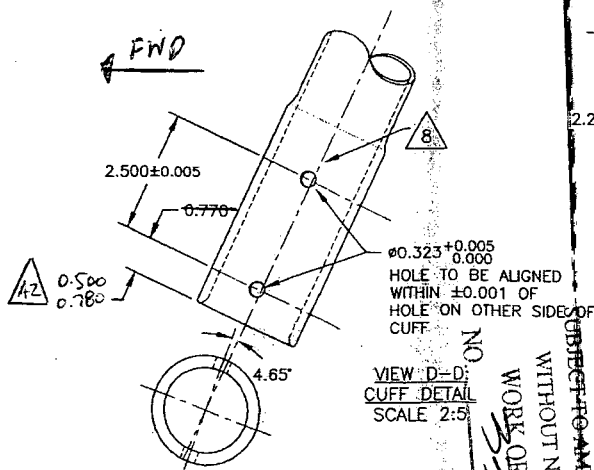
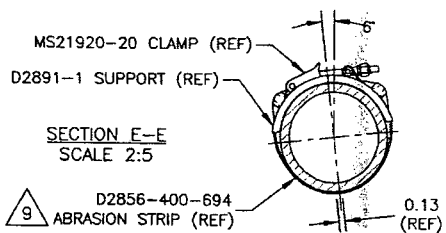
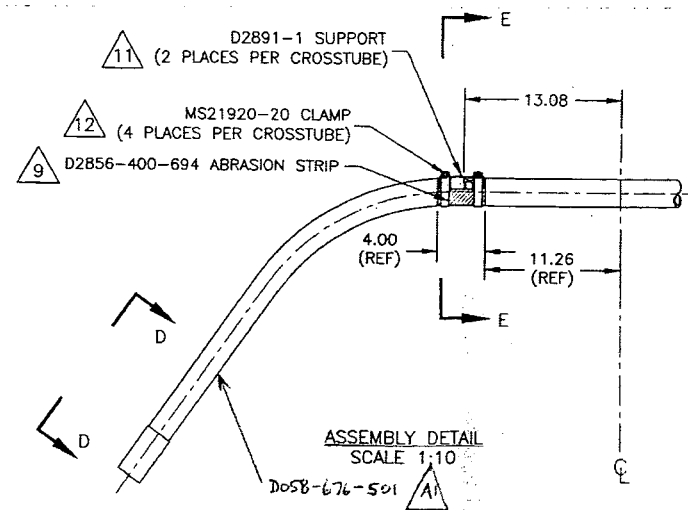
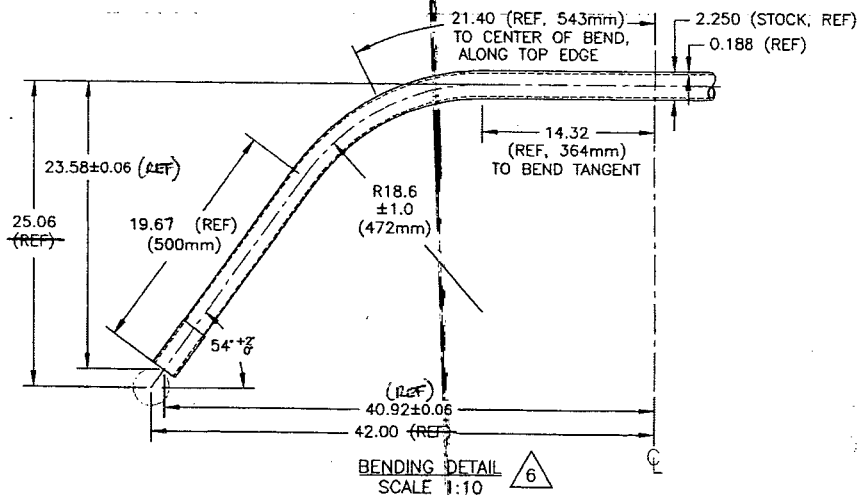
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|    |          |                          |             |
|----|----------|--------------------------|-------------|
| A2 | 01.07.16 | UPDATE DIM TO FIRST HOLE | <i># CP</i> |
| A1 | 01.03.07 | ADD D058-676-501 P/N     | <i># CP</i> |

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06.10.04  
update view 0-0  
BH  
02.06.06

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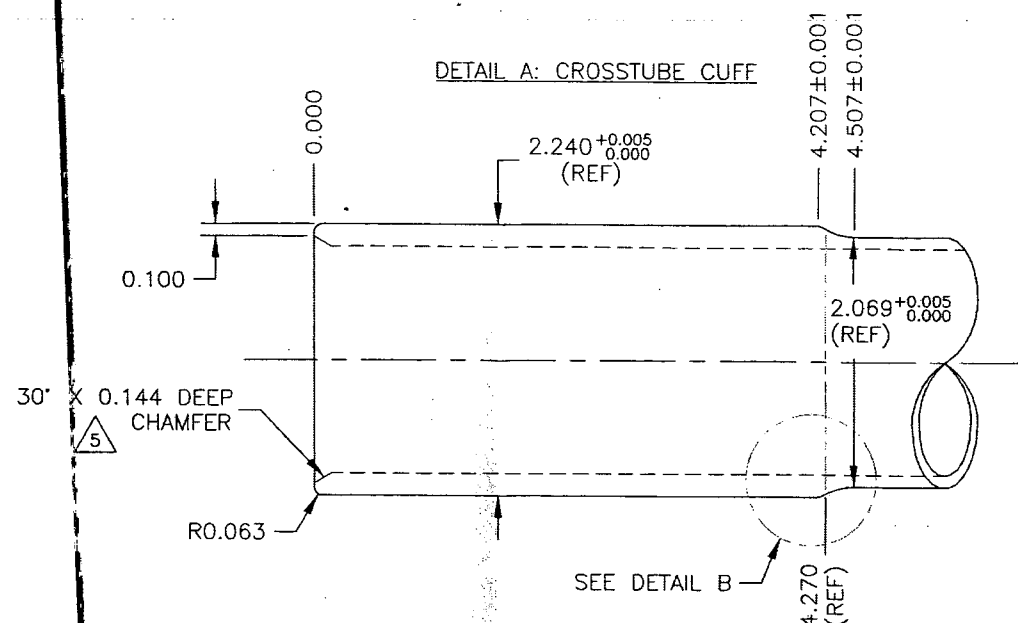
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|  |  | DATE<br>00.11.17 | TITLE<br>CROSSTUBE ASSEMBLY (04-55 HIGH FWD) | REV. A<br>SHEET 2 OF 3<br>SCALE<br>1:10                        |
|  |  |                  |  |  |

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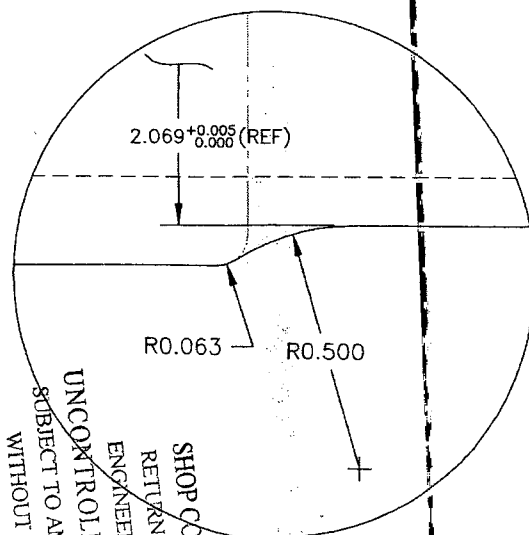


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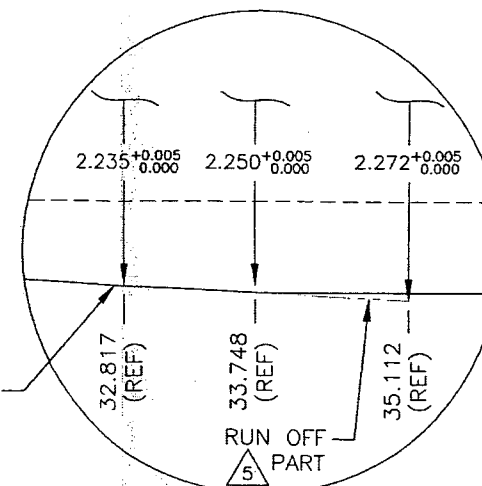
# DETAIL A: CROSSTUBE CUFF



## DETAIL B: CUFF TRANSITION SCALE 4:1



## DETAIL C: TAPER RUN-OFF NOT TO SCALE



UNDER REVIEW

06.10.13 PH

Update View P-0

PH  
02.06.06

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REV. A  
SHEET 3 OF 3

TITLE  
CROSSTUBE ASSEMBLY (on SR High FWP) 1:1





# LIQUID PENETRANT TEST REPORT

P - 1078 1

PAGE 1 OF 1

CLIENT DART AEROSPACE DATE NOV 23 2007 TIME AM ☐ PM ☐  
ATTENTION LINDA LACELLE ACUREN JOB NO. 188 07 1078  
ADDRESS 1270 ABERDEEN ST PO/VO No.  
HAWKESBURY, ONT. WORK LOCATION HAWKESBURY  
ACCEPTANCE STD. ASTM 1417/QSI-038 REV./DATE 2005  
PROJECT OH 58 FWD/AFT, 407 HIGH AFT X TUBES  
ITEM(S) EXAMINED JOB #S OH 58: 33149,33150,33151,33153,35530. JOB#S 407: 33324,35713

JOB DESCRIPTION PROCEDURE No. LT-0002 REV./DATE TECHNIQUE No. LT-TECH2 REV./DATE  
PART NO. D05876101,201/D407667205 MATERIAL ALODINED ALUM. THICKNESS  
SCOPE WET FLOURESCENT LIQUID PENETRANT INSPECTION CARRIED OUT ON 100% EXTERNAL SURFACE

## TEST DETAILS

|                       |   |                                  |  |  |  |
|-----------------------|---|----------------------------------|--|--|--|
| METHOD                | <input checked="" type="checkbox"/> FLUORESCENT | <input type="checkbox"/> VISIBLE | <input checked="" type="checkbox"/> WATER WASH | <input type="checkbox"/> SOLVENT REMOVABLE                     | <input type="checkbox"/> POST EMULSIFIED |
| FAMILY BRAND          | MAGNAFLUX                                       |                                  | BLACK LGHT8171                                 | <input type="checkbox"/> OUTPUT > 1000 $\mu$ W/CM <sup>2</sup> | <input type="checkbox"/> AMBIENT < 2 fc  |
| PENETRANTZL67         | MINIMUM DWELL TIME                              | 45 MIN.                          | LIGHTING EQUIP.                                | <input type="checkbox"/> FLASHLIGHT                            | <input type="checkbox"/> TROUBLELIGHT    |
| PENETRANT REMOVER H2O | MINIMUM DRY TIME                                | >10 MIN.                         | OTHER  | CAL SEP 18 07  |  |
| DEVELOPER SKDS2       | MINIMUM DWELL TIME                              | 10 MIN.                          | LIGHT METER S/N                                | CAL DUE DATE   |  |
| DEVELOPER TYPE        | <input checked="" type="checkbox"/> NON AQUEOUS | <input type="checkbox"/> AQUEOUS | <input type="checkbox"/> DRY                   |  |  |

## TEST SURFACE

|                     |                                       |  |  |                                       |  |
|---------------------|---------------------------------------|--|--|---------------------------------------|--|
| SURFACE CONDITION   | <input type="checkbox"/> AS GROUND    | <input checked="" type="checkbox"/> AS WELDED    | <input type="checkbox"/> MACHINED                | <input type="checkbox"/> SHOT BLASTED | <input checked="" type="checkbox"/> CLEAN BARE METAL |
| SURFACE TEMPERATURE | <input type="checkbox"/> < -4°C/ 20°F | <input type="checkbox"/> -4°C/ 20°F TO 10°C/50°F | <input type="checkbox"/> 10°C/50°F TO 52°C/125°F | <input type="checkbox"/> > 52°C/125°F |  |

RESULTS- (☐ METRIC ☒ IMPERIAL)

FLUORESCENT LIQUID PENETRANT INSPECTION  
CARRIED OUT ON 100% EXTERNAL SURFACE ON:

OH58 FWD X TUBES JOB#S:33149,35530  
OH58 AFT X TUBES JOB#S: 33150,33151,33153  
407 HIGH AFT TUBE JOB#: 33324,35713

RESULTS: NO INDICATION OF DEFECTS.

ITEMS ACCEPTABLE TO STANDARD.

**Scope of Services**  
The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner operator and the owner operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

**Standard of Care**  
In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

## SIGNATURES

|                         |  |                     |
|-------------------------|--|---------------------|
| CLIENT REPRESENTATIVE   | SIGNATURE                                  | DTR # E 27345 52 -  |
| TECHNICIAN (SIGNATURE): | SIGNATURE                                  | REPORT REVIEWED BY: |
| NAME (PRINT):           | JASON HEWETT<br>1 <sup>ST</sup> TECHNICIAN | NAME INITIALS       |
| CGSB LEVEL 2 SNT LEVEL  | CGSB LEVEL SNT LEVEL                       |                     |
| CGSB REG. NO. 6156      | CGSB REG. NO.                              |                     |

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